The opinion in support of the decision being entered today was **not** written for publication and is **not** binding precedent of the Board.

Paper No. 14

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JOHN G. McBRIDE

Appeal No. 2003-0611
Application 09/311,313

ON BRIEF

Before FLEMING, RUGGIERO, and MacDONALD, **Administrative Patent Judges.**

MACDONALD, **Administrative Patent Judge.**

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 1, 14, and 19. Claims 2-13, 15-18, and 20-22 are objected to as depending upon a rejected base claim, but would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims.

Invention

Appellant's invention relates to a computer aided circuit design system, and more particularly, to a method and apparatus for evaluating the design quality of a network of nodes in an integrated circuit to determine whether or not an element of the network is a feedback element (Appellant's specification at page 1, lines 7-10). Integrated circuits are electrical circuits comprised of transistors, resistors, capacitors, and other components (Appellant's specification at page 1, lines 13-14). Figures 4A and 4B show exemplary integrated circuits. Figure 4A illustrates a recycle loop 138 comprised of inverters 139 and 141, which are connected to a pass field effect transistor; and Figure 4B illustrates a schematic diagram of inverter 141 shown in Figure 4A (Appellant's specification at page 15, lines 25-27). Figures 6A-6C together represent a flow chart, which provides a detailed illustration of the method of the present invention in accordance with one embodiment for determining whether an element is a feedback element (Appellant's specification at page 6, lines 13-15). In Figure 4B, field effect transistor 147 is a feedback element since it is contained in the recycle loop 138 and is channel-connected to the input of the recycle loop. Field effect transistor 147 is evaluated in

accordance with the method illustrated in Figures 6A-6C to determine whether or not the field effect transistor is a feedback element (Appellant's specification at page 15, line 28 to page 16, line 2). The details of the method shown in figures 6A-6C include analyzing numerous details about the field effect transistor 147 (Appellant's specification, pages 17-21).

Claim 14 is representative of the claimed invention and is reproduced as follows:

> 14. A method comprising the step of:
>
> analyzing information related to the network to determine whether or not an element comprised in the integrated circuit is a feedback element, wherein said feedback element includes a transistor.

References

The references relied on by the Examiner are as follows:

McElvain 6,182,268 Jan. 30, 2001
(Filed Jan. 05, 1998)

Kuhns, "Automatic Testability Analysis of Analog Circuits and Systems," IEEE 1992, pages 225-231.

Rejections At Issue

Claims 1, 14 and 19 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Kuhns.

Claims 1, 14 and 19 stand rejected under 35 U.S.C. § 102(e) as being anticipated by McElvain.

Throughout our opinion, we make references to the Appellant's briefs and to the Examiner's Answer for the respective detail thereof[1].

OPINION

With full consideration being given to the subject matter on appeal, Examiner's rejections and the arguments of Appellant and Examiner, for the reasons stated **infra**, we affirm Examiner's rejection of claims 1, 14, and 19 under 35 U.S.C. § 102.

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[1]Appellant's brief filed August 22, 2002, Appellant's reply brief filed January 8, 2003, and the Examiner's answer mailed November 19, 2002.

We note that Appellant groups claims 1, 14, and 19 as a single claim group 1. See page 3 of the brief. Furthermore, Appellant argues the claims 1, 14, and 19 as a single group. See pages 4-6 of the brief and pages 1-3 of the reply brief. 37 CFR § 1.192 (c)(7) (July 1, 2002) as amended at 62 Fed. Reg. 53169 (October 10, 1997), which was controlling at the time of Appellant's filing of the brief, states:

> *Grouping of claims.* For each ground of rejection which appellant contests and which applies to a group of two or more claims, the Board shall select a single claim from the group and shall decide the appeal as to the ground of rejection on the basis of that claim alone unless a statement is included that the claims of the group do not stand or fall together and, in the argument under paragraph (c)(8) of this section, appellant explains why the claims of the group are believed to be separately patentable. Merely pointing out differences in what the claims cover is not an argument as to why the claims are separately patentable.

We will, thereby, consider Appellant's claims 1, 14, and 19, as standing or falling together and we will treat claim 14 as a representative claim of that group. "If the brief fails to meet either requirement, the Board is free to select a single claim from each group and to decide the appeal of that rejection based

solely on the selected representative claim." **In re McDaniel**, 293 F.3d 1379, 1383, 63 USPQ2d 1462, 1465 (Fed. Cir. 2002). See also **In re Watts**, 354 F.3d 1362, 69 USPQ2d 1453, 1457 (Fed. Cir. 2004).

I. **Whether the Rejection of Claims 1, 14, 19 Under 35 U.S.C. § 102(b) as Being Anticipated By Kuhns is proper?**

It is axiomatic that anticipation of a claim under § 102 can be found only if the prior art reference discloses every element of the claim. **See In re King**, 801 F.2d 1324, 1326, 231 USPQ 136, 138 (Fed. Cir. 1986) and **Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co.**, 730 F.2d 1452, 1458, 221 USPQ 481, 485 (Fed. Cir. 1984).

With respect to the Kuhns reference, Appellant argues at page 5 of the brief, "Kuhn's does not teach, disclose, or suggest the step of determining whether or not an element in an integrated circuit is a feedback element." Appellant expands this at page 2 of the reply belief, "Examiner's position is that the identification or detection of a feedback loop (which may comprise numerous circuit elements) anticipates the step of determining whether a particular element is a feedback element."

Appellant further argues at page 5 of the brief, "Kuhn's article is completely devoid of any teaching or suggestion that the feedback element includes a transistor." At page 2 of the reply brief Appellant additionally argues, "[I]t is desirable to identify particular elements that are feedback elements, as opposed to merely identifying a loop that may be a feedback loop."

To determine whether claim 14 is anticipated, we must first determine the scope of the claim. Appellant's specification shows a method at figures 6A-6C for analyzing whether the field effect transistor 147 in figure 4B is a feedback element. Appellant argues that "element" should be narrowly defined as a transistor to preclude Kuhn's feedback loop. Note that Appellant's figure 4A shows such a feedback loop formed by "recycle loop" 138 and Appellant's recycle loop including a transistor. In fact, Appellant's recycle loop 138 includes more than one transistor.

Our reviewing court states in **In re Zletz**, 983 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989) that "claims must be interpreted as broadly as their terms reasonably allow." Our reviewing court further states, "[T]he terms used in the claims

bear a 'heavy presumption' that they mean what they say and have the ordinary meaning that would be attributed to those words by persons skilled in the relevant art." **Texas Digital Systems Inc v. Telegenix Inc.**, 308 F.3d 1193, 1202, 64 USPQ2d 1812, 1817 (Fed. Cir. 2002).

Upon our review of Appellant's specification, we fail to find any definition of the term "element" that is different from the ordinary meaning. We find the ordinary meaning of the term "element" is best found in the dictionary. We note that the definition most suitable for "element" is "any device with terminals at which it can be connected to other electrical devices"[2]. We appreciate Appellant's position that "element" is only a transistor. However we find that the claim language does not preclude reading on an element that includes more than one transistor. As an example, Appellant's recycle loop 138 clearly fits the definition of an "element" as it is a "device with terminals at which it can be connected to other electrical devices."

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[2] Webster's New World Dictionary, Third College Edition, 1988, page 438. Copy provided to Appellant.

Now, the question before us is, what would Kuhns have taught to one having ordinary skill in the art? To answer this question we find the following facts:

1. Kuhns states at page 225, column 1, 2nd paragraph, an "Automated Testability Expert System Tool (AutoTEST)."

2. Kuhns states at page 225, column 1, 3rd paragraph, "AutoTEST is designed to perform an analysis with varying levels of components and circuit detail."

3. Kuhns states at page 225, column 2, 1st paragraph, that the process is performed on "a monolithic device (an MMIC or ASIC for example)".

4. An "MMIC" is a Main Memory Integrated Circuit.

5. An "ASIC" is an Auxiliary Storage Integrated Circuit.

6. A "monolithic device" is an integrated circuit.

7. An integrated circuit is comprised of transistors.

8. Kuhns states at page 230, column 2, 1st full paragraph "TESTABILITY RULES", "AutoTEST will search through the circuit looking for components that pose unique testing problems."

9. Kuhns states at page 230, column 2, 1st full paragraph, "A prime target for this type of analysis is the location of feedback loops."

10. Kuhns states at page 230, column 2, 1st full paragraph, "These feedback loops could be anything".

11. Kuhns further states at page 230, column 2, 1st full paragraph, that "anything" runs the gamut "from a servo control system to a simple resistive feedback circuit for an operational amplifier."

Appellant's argument, "Kuhn's does not teach, disclose, or suggest the step of determining whether or not an element in an integrated circuit is a feedback element", is not persuasive. As listed above, we find that Kuhns teaches performing analysis (fact 2) on an integrated circuit (facts 3-6) and that the analysis locates feedback loops (fact 9). Further, Kuhns teaches that the feedback loops could be any electrical circuit (facts 10-11). An electrical circuit clearly fits the definition of an "element" as it is a "device with terminals at which it can be connected to other electrical devices." We find that Kuhns teaches "the step of determining whether or not an element in an integrated circuit is a feedback element".

Appellant's further argument, "Kuhn's article is completely devoid of any teaching or suggestion that the feedback element includes a transistor" is equally unpersuasive. A person skilled in the art would recognize that Kuhn teaches transistor circuits (facts 3-6) and analysis of those circuits for feedback loops (facts 2 and 8-11). We find that Kuhn teaches "said feedback element includes a transistor."

Therefore, we will sustain the Examiner's rejection of claims 1, 14, and 19 under 35 U.S.C. § 102(b).

II. Whether the Rejection of Claims 1, 14, 19 Under 35 U.S.C. § 102(e) as Being Anticipated By McElvain is proper?

With respect to the McElvain reference, at page 6 of the brief Appellant argues, "there is absolutely no teaching nor mention of a method for determining whether a given element is a feedback element." Appellant also argues, "Furthermore, claim 14 requires that the identified feedback element include a transistor. The McElvain reference fails to disclose this claimed feature."

Now, the question before us is, what would McElvain have taught to one having ordinary skill in the art? To answer this question we find the following facts:

12. McElvain states at column 1, line 6, "The present invention relates generally to the field of circuit design analysis".

13. McElvain states at column 1, line 7, the present invention relates "more particularly to the design of integrated circuits".

14. McElvain states at column 2, line 35, "The present invention discloses methods and apparatuses which automatically extract finite state machine circuits from a digital circuit."

15. McElvain states at column 5, line 15, "Digital circuits designed for use in VLSI devices contain upwards of hundreds of thousands of transistors".

16. McElvain states at column 5, line 18, "State machines are fundamental building blocks or circuit elements within many digital circuits."

17. McElvain states at column 5, line 25, "a generalized state machine consists simply of logic circuits and a memory register."

18. McElvain states at column 5, line 28, "In many current VLSI devices, the state machine of Fig. 2 would be implemented in a programmable logic device".

19. McElvain states at column 5, line 33, "The state machine includes logic gates 202".

20. McElvain states at column 5, line 35, "Logic gate block 202 represents a combinatorial logic circuit".

21. McElvain states at column 7, line 9, "In step 304 the actual state machine circuitry associated with each of the state registers identified in step 302 is defined."

22. McElvain states at column 7, line 11, "the minimum group of gates which comprises the state machine is referred to as the 'minimum extraction region.'"

23. McElvain states at column 7, line 14, "the minimum extraction region for a state register is defined by determining all the devices included within the feedback path of the state register."

24. McElvain states at column 7, line 21, "any combinational device which receives one input which is traceable (coupled electrically) back to the state register's output and provides one output which is traceable (coupled electrically) forward to the input of the state register will be considered to be in the feedback path of the state register".

Appellant's argument with respect to the McElvain reference, "there is absolutely no teaching nor mention of a method for determining whether a given element is a feedback element", is not persuasive. As listed above, we find that McElvain teaches determining all the devices in the feedback path of the state register (fact 23). Further, McElvain teaches that a given element (combinational device) is in the feedback path if it meets certain set criteria (fact 24). We appreciate that due to the nature of state machines, it can be argued that a given feedback path in a state machine is transitory and exists only for a short time period. However, nothing in the claim language precludes this reading. Therefore, we find that McElvain teaches "the step of determining whether or not an element is a feedback element".

Appellant's further argument, that the McElvain reference fails to disclose the feedback element include a transistor, is equally unpersuasive. McElvain teaches that the combinational device is part of the state machine which in turn is part of the digital circuit (facts 14 and 16-20). McElvain also teaches that the digital circuit includes thousands of transistor circuits (fact 15). A person skilled in the art would recognize that the "combinational device" is made up of some portion of these

thousands of transistor circuits. We find that McElvain teaches "said feedback element includes a transistor."

Therefore, we will sustain the Examiner's rejection of claims 1, 14, and 19 under 35 U.S.C. § 102(e).

Other Issues

In the event of further prosecution of this application, the Examiner should address whether apparatus claim 1 is a proper 35 U.S.C. § 112, sixth paragraph claim. If claim 1 does not enjoy protection under 35 U.S.C. § 112, sixth paragraph as being "for a combination", then the Examiner should address the issue of whether a "single means" rejection under 35 U.S.C. § 112, first paragraph is appropriate. **See In re Hyatt**, 708 F.2d 712, 714-715, 218 USPQ 195, 197 (Fed. Cir. 1983), and see the Manual of Patent Examining Procedure §2164.08(a).

Similarly, the Examiner should address whether apparatus claim 2-13 are proper 35 U.S.C. § 112, sixth paragraph claims. The only structure recited is the computer in claim 2. While this might normally be sufficient structure, Appellant has specifically defined "computer" at page 8 of the specification to

be "any machine capable of performing the calculations, or computations". Thus the word "computer" does not indicate a specific structural limitation in the claims and should be read as "means". Thus all the functions recited in claims 2-13 are performed by a single means.

Similarly, the Examiner should address whether method claims 14-18 are proper 35 U.S.C. § 112, sixth paragraph claims.

Lastly, the Examiner should address whether "computer program" claims 19-22 are proper 35 U.S.C. § 101 claims given that these claims are all directed to a "computer program" per se?

Conclusion

In view of the foregoing discussion, we have sustained the rejection under 35 U.S.C. § 102 of claims 1, 14, and 19.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

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